



Infrastructure UK

Investigation into the cost of Civil Engineering Infrastructure

Non-Cost Questionnaire (UK)
[Final version]

Interview Questionnaire



Infrastructure UK

Preamble

As part of our gathering of evidence, we have a series of structured questions to ask. We will start at a high level, looking at a number of issues such as the overall industry structure and how companies and contracts are structured. We will then start to look in a bit more detail at the way projects are set up and those non-cost factors that may influence the success, including financial success, of these projects.

(and, where we are focussing on specific project data:)

We will then focus on some specific questions related to individual projects. This is primarily non-cost data (where appropriate we are gathering the detailed cost data separately), but will allow us to compare the relative performance of projects across different sectors and geographies.

Section 1 - Generic

	Topic	Question	Response	No.
1	Industry Structure	Of Europe's top 20 contractors, only two are UK based. Do you have any evidence of whether the relative size and vertical integration of UK contractors influences the level of construction cost in delivering UK infrastructure?	Size/vertical integration has not been recognised as an issue.	1.01
	<i>follow up</i>	What do you feel are the main factors behind the size disparity?	The UK market in building and civil engineering appears to be more	1.02
	<i>follow up</i>	What do you feel are the main factors behind the lack of vertical integration in the UK?	Not recognised	1.03
	<i>follow up</i>	UK consultants, by contrast, tend to be larger and more influential than their European peers. Do you have any evidence of whether this influences the relative or absolute costs of infrastructure delivery in the UK?	No evidence	1.04
2	Industry Structure	On major infrastructure projects in the UK to what extent is it generally necessary for UK contractors and/or consultants to joint venture with other UK and non-UK firms. How does this impact costs (please provide examples)?	We have not experienced an issue with UK contractors needing to JV in regard to technical competency or ability. The need to JV appears to be as a consequence of	2.01
	<i>follow up</i>	Do you have any evidence of how this may differ in other EU countries?	No	2.02
3	Industry Structure	Do UK clients differ significantly from other European clients in their approach to the construction market? If so, please give examples, with specific reference to the impact on construction costs.	UK clients are arguably more intrusive in particular regard to compliance with legislation, standards and specifications.	3.01
	<i>follow up</i>	Any other examples from elsewhere in the world?		3.02
4	Industry Structure	To what extent do you consider the relative fragmentation of the UK construction market a barrier to other European contractors and does this impact on either competition or out-turn costs?	Fragmentation arguably encourages greater competition and drives down costs.	4.01
	<i>follow up</i>	Can you give any specific examples of how fragmentation has impacted on competition or outturn costs?		4.02
5	Market Structure	Do you believe the lack of pipeline (visible continuity of forward work) in the UK relative to the rest of Europe leads to higher costs of infrastructure?	<input checked="" type="radio"/> Yes <input type="radio"/> No	5.01

	<i>follow up</i>	Are you able to provide direct cost examples (<i>Prompt: e.g. Inefficiencies arising from demobilising/mobilising teams and supplier relationships</i>)	We recognise that workload visibility is a critical factor in becoming efficient.. In	5.02
	<i>follow up</i>	Are you able to provide indirect cost examples (<i>Prompt: e.g. lack of incentive to invest in systems and skills - what percentage of turnover is invested in skills development</i>)		5.03
6	Market Structure	Do you have any examples where piecemeal placement of work into the marketplace has resulted in additional costs and complexity ?	No	6.01
	<i>follow up</i>	Prompt: For example, package interfaces to be managed, transaction costs, management of risk, design revisions		6.02
7	Market Structure	Do you have examples of the impact on UK construction costs from any of the following factors: a) Relative productivity, skills and flexibility of UK labour vs. other European countries? b) UK plant pricing variability, either within the UK or relative to other European projects? c) Tendency in UK to hire more plant relative to other European countries? d) UK materials pricing variability, either within the UK or relative to other European projects? e) Increased demand from concurrent major projects in the UK?	In Network Rail we are currently reviewing, comparing and contrasting productivity and input prices between the UK and Europe.	7.01
	<i>follow up</i>	Do you have any benchmark data to support this?	Ongoing	7.02
	<i>follow up</i>	What are the key decision criteria (incl. financial) determining whether to hire or own / purchase plant?		7.03
	<i>follow up</i>	Referring to d) above: What strategy have you followed in such instances?		7.04
8	Contract and Commercial	What factors influence the form of contract chosen for a project?	The form of contract is dependant upon the project size and the risk/uncertainty	8.01
	<i>follow up</i>	What is the most commonly used form of contract (NEC/JCT/ICE)? (prompt: may need to provide sector specific examples)	ICE and JCT	8.02
	<i>follow up</i>	Can you provide cost comparisons from projects using different forms of contract?	Current experience is illustrating that ICE lump sum design and construct contracts	8.03
	<i>follow up</i>	Standard forms of contract are sometimes adapted from their original form. Can you provide your estimate of what percentage of contracts is this applied to? What percentage of contracts let are bespoke contracts? Does this vary	All standard forms of contract have an equivalent Network Rail form.	8.04
9	Contract and Commercial	(For client organisations:) Thinking of project governance for a typical project, what is the proportional cost of governance (including personnel functions, reporting and auditing) vs. total project cost?	Difficult to ascertain although circa. 5%	9.01
	<i>follow up</i>	(For clients) - What levels /types of governance do you pass down to the supply chain?	GRIP Procedures/process. Also standard systems such as Oracle Projects,	9.02
	<i>Contractor primary question</i>	(For contractors) - Do you have evidence of duplication between the governance processes and procedures of the Client and what they require of you and your supply chain?		9.03

10a	Contract and Commercial	For Clients: At what stage in your project were your delivery partners / contractors fully engaged? Business case Funding approval Concept Scheme Tender Design	<input type="radio"/> Business Case <input type="radio"/> Funding Approval <input checked="" type="radio"/> Concept <input type="radio"/> Scheme <input type="radio"/> Tender Design	10.01
	<i>follow up</i>	What is the reasoning behind that choice?	Network Rail has 'in-house' contractor expertise to provide sufficient	10.02
10b	Contract and Commercial	For Contractors: Typically, at what stage of the project are you initially involved? Business case Funding approval Concept Scheme Tender Design	<input type="radio"/> Business Case <input type="radio"/> Funding Approval <input checked="" type="radio"/> Concept <input type="radio"/> Scheme <input type="radio"/> Tender Design	10.03
	<i>follow up</i>	Do you believe this is the optimum time to be engaged?	<input checked="" type="radio"/> Yes <input type="radio"/> No	10.04
	<i>follow up</i>	Is the stage at which a contract is let a factor in whether you tender the work?	<input checked="" type="radio"/> Yes <input type="radio"/> No	10.05
11	Contract and Commercial	How is PI insurance typically provided on your projects? Who normally provides it?	PI generally provided by Consultants and/or Design and Construct Contractors.	11.01
	<i>follow up</i>	What provisions are made within your PI insurance?		11.02
	<i>follow up</i>	Can you provide examples of where PI has inflated the cost of the project?	No - generally considered circa. 1% of outturn	11.03
	<i>follow up</i>	What would be your approach to risk if the designer/contractor were not required to provide PI?		11.04
	<i>follow up</i>	Can you provide examples of a project where the designer was not required to provide the PI?	On the West Coast Project Network Rail provided however designers still	11.05
12	Contract and Commercial	How is index linked inflation priced on long term projects/PFI projects?	Generally for projects <2 years no inflation. For long term frameworks the	12.01
	<i>follow up</i>	What factors influence who takes the risk on inflation?		12.02
	<i>follow up</i>	Do you have any examples where index linked inflation was inappropriately transferred to the contractor resulting in greater project outturn cost?	No	12.03
13	Design and Specification	Would you agree with the proposition that In the UK the scope of a project is more likely to increase during the planning, pre-construction and construction phases, than on overseas projects? If so, why?		13.01
	<i>follow up</i>	Do you have any examples of where a poor client brief led to increases in costs that could not be removed during design development?		13.02
14	Design and Specification	Do you have any examples of differences in design standards between the UK and elsewhere that materially affect project costs? If so, what is the reason for this?	We do not have any specific examples. However it is worth reflecting upon our experience to date with Eurocodes. It is a	14.01

	<i>follow up</i>	Do you have any examples of differences in temporary works design standards?	No	14.02
	<i>follow up</i>	Do you have any examples of differences in permanent works design standards?	See above	14.03
	<i>follow up</i>	Would you agree that the cost of environmental and sustainability obligations (management, compliance & assurance) is more costly in the UK than in Europe? Do you have examples?	Yes	14.04
	<i>follow up</i>	Do you have any examples of EU environmental legislation which is complied with more strictly in the UK than elsewhere in EU?	The UK approach to protected species is far in excess of mainland Europe. The	14.05
	<i>follow up</i>	Do you have any examples of Eurocodes being complied with more strictly in the UK than elsewhere in EU?		14.06
15	Design and Specification	Do you agree that the UK has less standardisation (or more bespoke design) than overseas? If so, do you have examples?	This has been an issue in the rail industry since 1996 when the libraries of standard	15.01
	<i>follow up</i>	Do you agree that prefabrication leads to cost savings? If so, do you have examples?	In general yes however the benefits are also significant in regard to quality	15.02
16	Design and Specification	Do you have any examples where designs have been unduly enhanced to reduce maintenance costs, reduce risk or increase service life?	An example is the high factors of safety on embankment design. Our	16.01
	<i>follow up</i>	Can you give reasons for these examples?		16.02
17	Innovation	Do you have any examples of off-site fabrication achieving costs savings, either in the UK or in other EU countries? If so, please provide details e.g. what elements were selected, at what stage decisions were made, key reasons and	In Network Rail we have reduced costs by standardising and prefabricating bridge abutments, bridge beams, complete	17.01
	<i>follow up</i>	What are the industry and project factors that support or hinder adoption of off site manufacture?		17.02
	<i>follow up</i>	Do you have any examples of where a client's reluctance to accept innovative solutions led to increases in the outturn cost?	Yes - there has been a reluctance recently to accept helical piling	17.03
	<i>follow up</i>	Any examples from other project stakeholders (end user, designer, contractor etc)		17.04
18	Regulations and Compliance	Do you have any examples of EU legislation in general which is complied with more strictly in the UK than elsewhere in EU?	<input checked="" type="radio"/> Yes <input type="radio"/> No	18.01
	<i>follow up</i>	And what were the effects of this compliance?	Environmental legislation imposes	18.02
	<i>follow up</i>	Do you agree that compliance with the UK's CDM or other Health & Safety Regulations add cost when compared with other EU countries? If so, do you have examples?	The CDM Regulations 2007 are sensibly applied in the UK.. The Uk is arguably/possibly overprescriptive and	18.03
	<i>follow up (if relevant)</i>	Do you agree that the rail Assurance process in the UK adds significant cost to railway projects in the UK? If so, do you have examples?	historically in the rail industry specifications have been overly	18.04
19	Risk and Value Engineering	Do you have examples of where excessive risk contingencies have been included in the cost model for a project, and the monies spent on scope growth rather than the identified risk?	Yes but more often the case is that we underestimate the levels of risk.	19.01
	<i>follow up</i>	How was this decided and by whom?	All projects >£500k have a formal risk and	19.02
20	Risk and Value Engineering	Do you have any examples of an overall scope and cost increase in a project which was instigated by a cost saving elsewhere on the project? (e.g. value engineering)	No	20.01
	<i>follow up</i>	When was this realised? Was an assessment of impacts done?		20.02

21	Change Management	Do you have a standardised change management process used on all projects?	<input checked="" type="radio"/> Yes <input type="radio"/> No	21.01
	<i>follow up</i>	Who is usually responsible for managing change on a project?	The Project Manager is accountable	21.02
22	Change Management	Does the preferred/standard form of contract you operate under have open book cost management requirements?	<input type="radio"/> Yes <input checked="" type="radio"/> No	22.01
	<i>follow up</i>	Are the Contractor's costs fully visible?	<input checked="" type="radio"/> Yes <input type="radio"/> No	22.02
	<i>follow up</i>	Do you have standardised cost management process used on all projects?	<input checked="" type="radio"/> Yes <input type="radio"/> No	22.03
	<i>follow up</i>	Who is responsible for cost management on a project?	The Project Manager is accountable	22.04
23	Client Leadership	Are you able to offer globally competitive salaries and packages at Programme Director level and above? If not, what constraints do you face?	We believe salaries are competitive	23.01
	<i>follow up</i>	At Programme Director level and above, what is the relative balance between base package and performance related payments?	80% base - 20% performance related bonus	23.02
	<i>follow up</i>	Do you face any constraints in making performance related payments a significant part of total rewards? If yes, what constraints do you face?	Regulated industry	23.03

Section 2 - Project Specific

nb: need to ensure each project has unique question and answer data set

Project Name
 Sector

Topic	Question	Response	No.
24 Project Structure	Looking at the attached sample project organisation charts from the OGC, please indicate which one best resembles the organisation structure of this project?	<input checked="" type="radio"/> 2. The Integrated Approach <input type="radio"/> 3. The Integrated Project Team <input type="radio"/> 4. Traditional Approach	24.01
<i>follow up</i>	What were the factors influencing the choice of project structure? (and if different to samples - Why did the project not choose one of the standard structures?)		24.02
<i>follow up</i>	Who carried out the key functions of Investment Decision Maker/ Senior Responsible Owner/ Project Sponsor/Project Manager?		24.03
<i>follow up</i>	Please indicate for this project, where relevant, which organisations performed the following functions:		24.04
	Investment Decision Maker		24.04.01
	Senior Responsible Owner		24.04.02
	Project Sponsor		24.04.03
	Independent Client Advisor(s)		24.04.04
	User Panel		24.04.05
<i>follow up</i>	Was there a Project Board and who had representation on it?		24.05
<i>follow up</i>	Did the function of Investment Decision Maker/Senior Responsible Owner change hands during the project, and if so what impact did this have?		24.06
25 Project Structure	Was there a single identifiable leader for the project? (who was it?)		25.01
<i>follow up</i>	How was the project leader selected and at what stage of the project development?		25.02
<i>follow up</i>	Was the project leader autonomous and empowered to take decisions on behalf of all stakeholders?	<input checked="" type="radio"/> Yes <input type="radio"/> No	25.03
<i>follow up</i>	Can you provide specific examples (good and bad) of how the project leadership behaviour influenced the project outcome in terms of cost?		25.04
26 Project Structure	Did the project employ a separate Project /Programme Management organisation (delivery partner)?	<input checked="" type="radio"/> Yes <input type="radio"/> No	26.01
<i>follow up</i>	What was the rationale for employing a PM organisation?		26.02
<i>follow up</i>	Did the PM/Programme Management Team duplicate any of the roles of the Client/Supply Chain? Which ones?		26.03
<i>follow up</i>	What were the percentage costs of the PM vs. the project total?		26.04
<i>follow up</i>	With hindsight did they add to or reduce effectiveness of the project delivery?	<input checked="" type="radio"/> Yes <input type="radio"/> No	26.05

27	Project Scope	What key third party requirements were incorporated into how the project had to be delivered?		27.01
	<i>follow up</i>	How was the impact and cost of the third party requirements evaluated?		27.02
	<i>follow up</i>	How were they consulted and what ability did they have to influence the scheme?		27.03
	<i>follow up</i>	Was there a mechanism for managing stakeholder decisions/requirements?	<input checked="" type="radio"/> Yes <input type="radio"/> No	27.04
	<i>follow up</i>	Was the aggregate effect of the individual third party requirements evaluated?	<input checked="" type="radio"/> Yes <input type="radio"/> No	27.05
	<i>follow up</i>	Was the final impact of the third party requirements in line with the initial evaluation?	<input checked="" type="radio"/> Yes <input type="radio"/> No	27.06
	<i>follow up</i>	Of the key third party requirements how many as a percentage were introduced after contract award?		27.07
28	Project Scope	What range of Client services were provided for the project?		28.01
	<i>follow up</i>	Were any of these services duplicated by the supply chain? (why?)		28.02
	<i>follow up</i>	What were the percentage cost of the Client team as a proportion of the project total?		28.03
29	Contract and Commercial	What factors influenced the selection of the final procurement route?		29.01
	<i>follow up</i>	Were these primarily based on short term or long term drivers?		29.02
	<i>follow up</i>	In hindsight are these the factors that should have been considered?	<input checked="" type="radio"/> Yes <input type="radio"/> No	29.03
	<i>follow up</i>	Were any changes made to the contract after award?	<input checked="" type="radio"/> Yes <input type="radio"/> No	29.04
	<i>follow up</i>	Was the project split into smaller elements in order to ensure the necessary numbers of competitive tenderers?	<input checked="" type="radio"/> Yes <input type="radio"/> No	29.05
	<i>follow up</i>	Was this project tendered with less than three competitors (if yes what the reason for this)?		29.06
30	Contract and Commercial	Who owned the inflation and exchange rate risk on the project?		30.01
	<i>follow up</i>	How was the escalation and exchange rate estimated at the outset?		30.02
	<i>follow up</i>	Was the escalation and exchange rate hedged? (how?)		30.03
	<i>follow up</i>	Were indices used to evaluate inflation? (which ones?)		30.04
	<i>follow up</i>	What happened to any surplus value at the end of the project?		30.05
31	Contract and Commercial	What level of Optimism Bias was applied to the project?		31.01
	<i>follow up</i>	Was this element of the project budget specifically controlled and managed?	<input checked="" type="radio"/> Yes <input type="radio"/> No	31.02
	<i>follow up</i>	If so who's responsibility was this and how was access given to using it?		31.03
	<i>follow up</i>	Was it an explicit project objective to minimise the spending of this contingency? How much of the contingency was actually spent, and why?		31.04

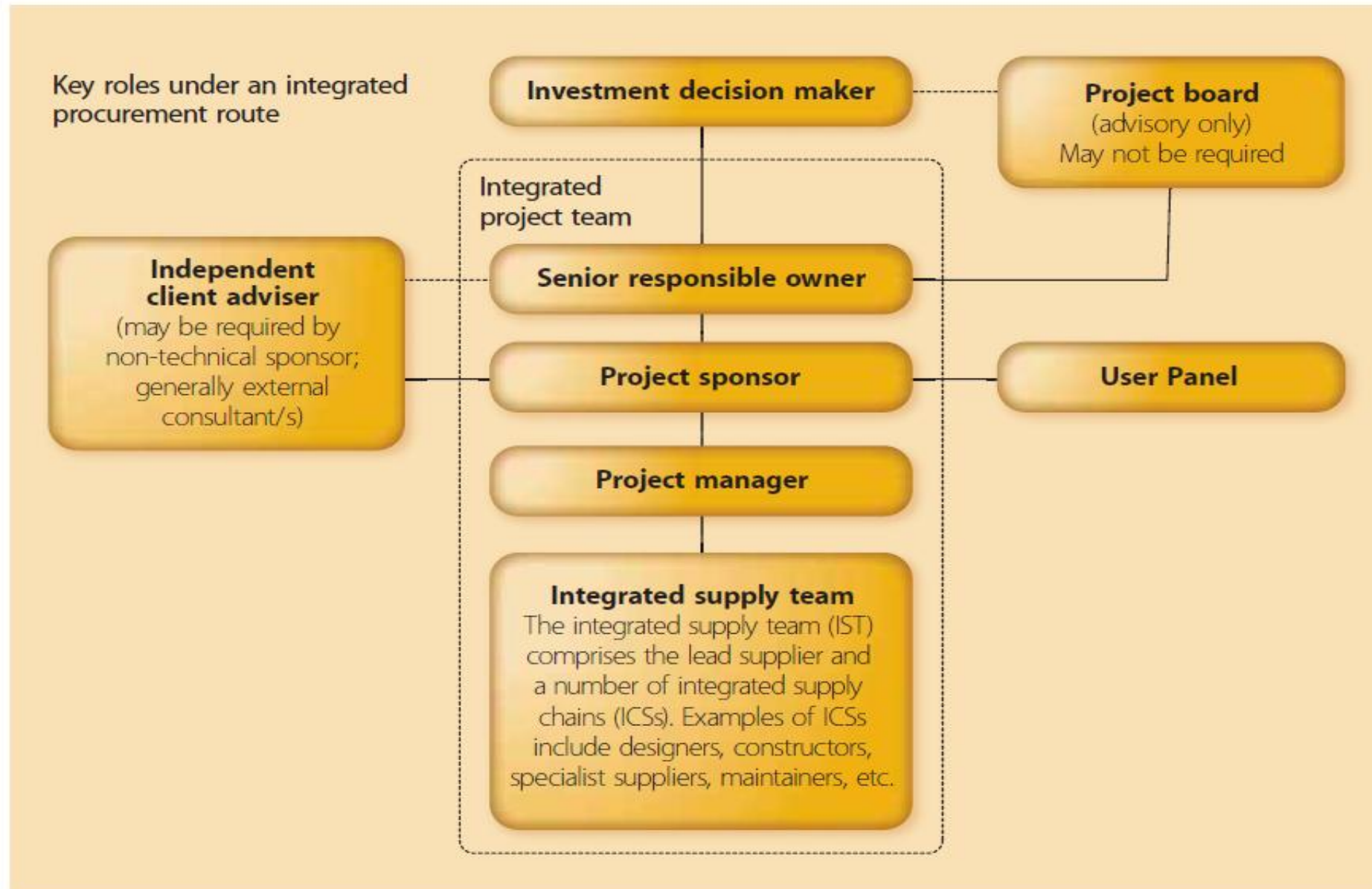
32	Contract and Commercial	At what stage of the project was the contractor appointed/engaged in the process		32.01
	<i>follow up</i>	What factors drove that decision?		32.02
	<i>follow up</i>	If a project management team was appointed, what involvement did they have in the selection of the contractor?		32.03
33	Contract and Commercial	Did this project have financial incentivisation for the project participants to save costs?	<input checked="" type="radio"/> Yes <input type="radio"/> No	33.01
	<i>follow up</i>	If so, what were the arrangements and how were these different for the different parties?		33.02
	<i>follow up</i>	If so, were you able to measure the success of this incentivisation?		33.03
34	Design and Specification	Was the contractor responsible for design at any stage of the project?	<input checked="" type="radio"/> Yes <input type="radio"/> No	34.01
	<i>follow up</i>	If yes, at what point did responsibility transfer from the Client to the Contractor (e.g.. Bid stage, tender award, ECI)?		34.02
	<i>follow up</i>	What factors determined that the design should be transferred?		34.03
	<i>follow up</i>	What if any issues arose out of the transfer of the design risk to the Contractor?		34.04
	<i>follow up</i>	Please can you provide the costs associated with transfer of design risk to the Contractor?		34.05
35	Design and Specification	How complete was the design at start of construction as a percentage (or GRIP/RIBA)?		35.01
	<i>follow up</i>	Was this the intended status of the design at start of construction and was the status recognised by all parties?		35.02
	<i>follow up</i>	If the design was incomplete - what were the reasons for starting construction?		35.03
	<i>follow up</i>	Were there significant scope changes during the construction of the project?	<input checked="" type="radio"/> Yes <input type="radio"/> No	35.04
	<i>follow up</i>	If yes what were they and what factors/organisations/stakeholders that were driving these changes?		35.05
	<i>follow up</i>	What were the primary mechanisms in place for controlling change, and were these effective?		35.06
	<i>follow up</i>	What was the cost of change on the project as a percentage of the total cost?		35.07
36	Design and Specification	How many times was the design substantially handed over from one organisation to another? (e.g. from Scheme Design consultant to contractor; or from concept design consultant to scheme design consultant)		36.01
	<i>follow up</i>	Were these planned, and was the impact assessed?		36.02
	<i>follow up</i>	How many separate design contracts were let for architecture/engineering/other?		36.03
37	Innovation	Was any of the project affected by design innovation or new technology?		37.01
	<i>follow up</i>	Did these innovations have a high risk attached to them?		37.02
	<i>follow up</i>	Who instigated these and how were they evaluated?		37.03
38	Innovation	On this project did you use off-site fabrication?	<input checked="" type="radio"/> Yes <input type="radio"/> No	38.01

Yes

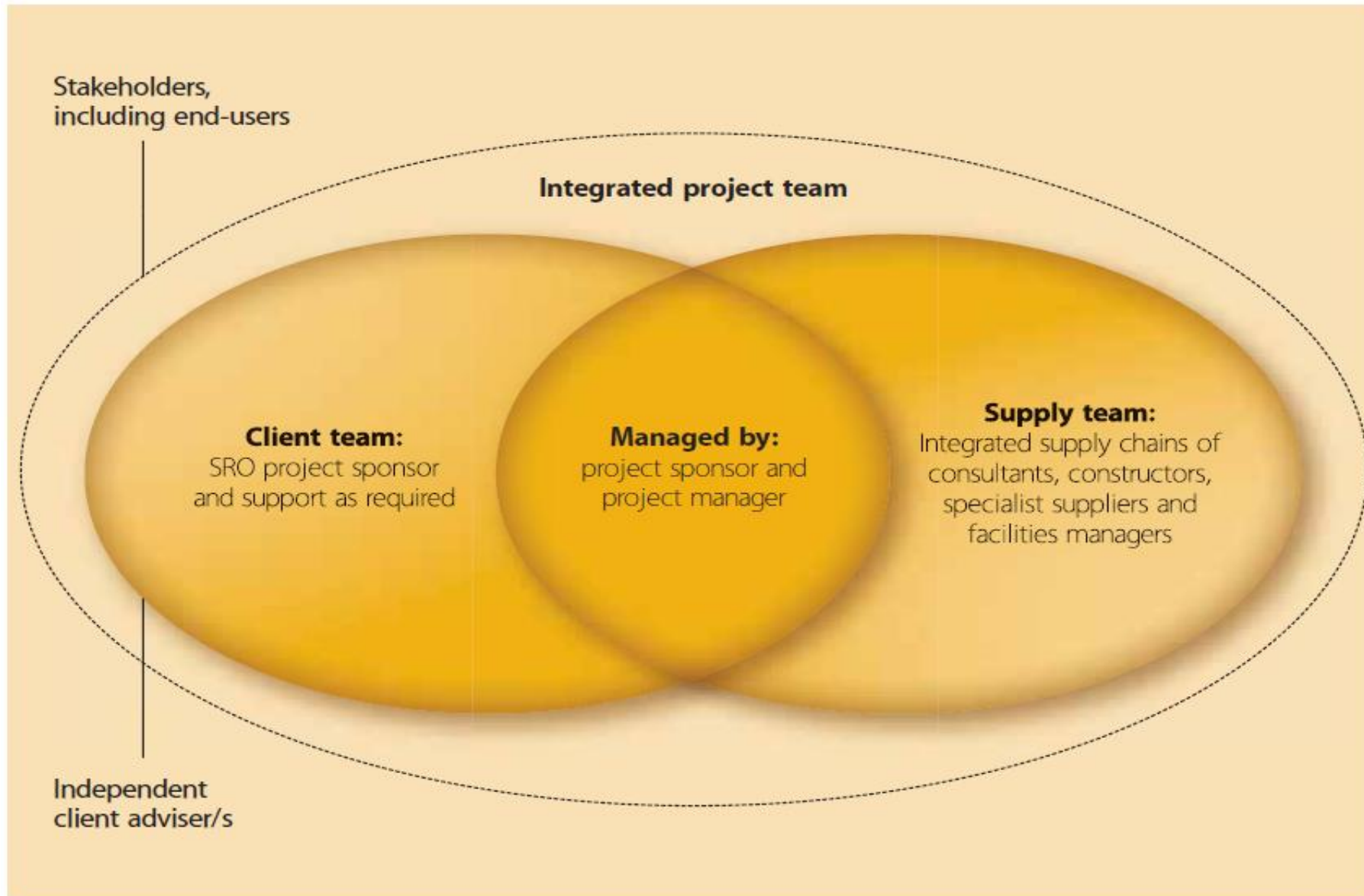
	<i>follow up</i>	Did that achieve costs savings? If so, please provide details e.g. what elements were selected, at what stage decisions were made, key reasons and cost savings / benefits achieved?		38.02
	<i>follow up</i>	What were the factors that supported or hindered adoption of off site manufacture?		38.03
39	Change Management	For this project was there correlation between the risk register at the outset and the changes that occurred over the project?	<input checked="" type="radio"/> Yes <input type="radio"/> No	39.01
	<i>follow up</i>	What were the main causes of change and were they predicted?		39.02
	<i>follow up</i>	What percentage of total project cost was attributable to change?		39.03
40	Change Management	Were project controls measuring cost/schedule/risk fully implemented on the project from the outset?	<input checked="" type="radio"/> Yes <input type="radio"/> No	40.01
	<i>follow up</i>	Who established the systems of project controls?		40.02
	<i>follow up</i>	What processes were used at the start to verify the initial data used for the project controls baseline?		40.03
	<i>follow up</i>	Who was responsible for producing the data for the project controls?		40.04
	<i>follow up</i>	Was there a dedicated Project Controls resource allocated to the project?	<input checked="" type="radio"/> Yes <input type="radio"/> No	40.05
	<i>follow up</i>	How frequently and by who were project controls reviewed and what processes were in place for responding to information produced (e.g. trending)?		40.06
	<i>follow up</i>	How was the information from the project controls incorporated into the forecasts?		40.07
	<i>follow up</i>	What was the variance in programme and cost from the original contract costs?		40.08
41	Delivery Team	Workpackaging: What determined the work package structure on this project?		41.01
	<i>follow up</i>	What additional costs and complexity has the work package structure imposed on the project e.g. package interfaces to be managed, transaction costs, management of risk, design revisions?		41.02
42	Delivery Team	Subcontracting: What was subcontracted and why?		42.01
	<i>follow up</i>	How many subcontracts were there and what was their value (as percentage of project value)?		42.02
	<i>follow up</i>	How many levels of subcontracting were there below the prime contractor?		42.03
	<i>follow up</i>	Do you have figures that give direct staff numbers vs. subcontractor staff numbers?		42.04
	<i>follow up</i>	Are you aware of duplication of risk provisions through the supply chain? Do you know what percentage of additional cost these represent?		42.05
	<i>follow up</i>	Were subcontractors procured on contracts that are back to back with the main form of contract?	<input checked="" type="radio"/> Yes <input type="radio"/> No	42.06
43	Delivery Team	How long after contract award to the contractor did construction start on site?		43.01
	<i>follow up</i>	What factors influenced this duration?		43.02
	<i>follow up</i>	Was the design completed at contract award/construction start?	<input checked="" type="radio"/> Yes <input type="radio"/> No	43.03
44	Labour, Plant, Material Inputs	What were the key decision criteria for the project (incl. financial) determining whether to hire or own / purchase plant?		44.01

	<i>follow up</i>	What specialist plant was required for the project and was it already available to the Contractor or did it need to be sourced specially?		44.02
	<i>follow up</i>	What additional costs (if any) did this impose on the project e.g. transport, refurbishment, re-design costs, delays?		44.03
	<i>follow up</i>	If the specialist plant was subsequently sold, what £ / % of the original cost was recovered and did the client benefit?		44.04
45	Project Outcomes	Was the project a success?	<input checked="" type="radio"/> Yes <input type="radio"/> No	45.01
	<i>follow up</i>	Was it on time? (if not, how early or late)		45.02
	<i>follow up</i>	Was it on budget (if not how much under / over)		45.03
	<i>follow up</i>	Are you proud to have been associated with this project?	<input checked="" type="radio"/> Yes <input type="radio"/> No	45.04
	<i>follow up</i>	Anything else you wish to add on this project?		45.05

2 The integrated approach



3 The integrated project team



4 Traditional approach

